

REMARKS

Claims 1-14 are pending in the present application. Claims 1, 5, 9, and 14 have been amended. No new matter has been added to the new or amended claims. Reconsideration of the claims is respectfully requested in light of the remarks below.

Rejections of the Claims Based on Prior Art

The office action rejected claims 1, 4, 5, 8, 9 and 14 as being anticipated under 35 U.S.C. §102(e) by U.S. Patent Application Publication 2004/0001268 Deeman et al. The office action also rejected claims 2, 3, 6, 7, and 10 as being obvious over Deeman et al. in light of Hrinya et al.

A. Amendments to the Claims

Independent claims 1, 5, and 9 of the present application have been amended to clarify the claimed invention. Claim 1, for example, has been amended to recite “calculating a varying spacing distance between the read element and the write element as a function of a radius of the hard disk; . . . wherein the radius of curvature of the edges of the data tracks and the radius of curvature of the edges of the subsequent servo samples are determined based on the varying spacing distance between the read element and the write element as the function of the radius of the hard disk.”

B. Support for the Amendments

Support for the amendments to claims 1, 5, and 9 can be found in the present application, e.g., in Figure 12. Figure 12 of the present patent application shows that if customer data is placed in portion 1204, the edge of unused area 1201 that is adjacent to portion 1204 has a different radius of curvature relative to the opposite edge of region 1201.

Further support can be found in the specification on page 9, paragraph 36, “FIG. 12 depicts a portion 1204 of unused area 1201 that can be utilized for customer data after the format efficiency of a hard disk drive 1200 has been improved based on a mathematical calculation of the spacing distance between the read sensor and the write element as a function of the radius of hard disk drive 1200 according to the present invention. In FIG. 12, hard disk drive

1200 includes a suspension 1205 of a rotary actuator, and an offset read/write head 1206. The increase in format efficiency is depicted as 509 in FIG. 5B as a function of track length 506.”

Additional support can be found in the specification in Figure 5B and on page 7, paragraph 29, “FIG. 5B shows a portion 509 of unused area 401 that is utilized by the present invention that would otherwise be wasted because of the conventional assumption of the uniformity of unused space 401.” In paragraph 28 on page 7, the present application states that “Unused area 401 is a small area that is between the end 508 of customer data track 506 and the beginning 507 of servo sampled 504.”

Support for the varying spacing distance between the read element and the write element and its effect on the spacing loss can be found in the present application, e.g., in Figure 9 and on page 8, paragraph 35, “FIG. 9 depicts that the spacing loss decreases at the outer and inner diameters of a hard disk. In FIG. 9, a read/write head 900 having a read element 901 and a write element 902 is depicted near the inner diameter 910, at zero skew 920 (i.e., $E = 0^\circ$) and near the outer diameter 930 of a hard disk with respect to a servo sample 903 and customer data 904. Near the inner diameter 910 and near outer diameter 930, the respective separations 911 and 931 between the read element 901 and write element 902 are reduced in comparison to separation 921 when read/write head 900 is at zero skew 920.”

C. Discussion of the Cited Prior Art

In paragraph [0022], Deeman et al. states that “the disk drive's actuator pivot arm would be much shorter than the servo writer's actuator pivot arm 17. In actual fact, disk drive arms typically have much shorter lengths than servo writer arms. They describe arcs that have smaller radii of curvature than the arcs described by the servo writer arms.” Thus, Deeman et al. discloses that the different radii of curvature of the arcs are determined by the lengths of the actuator arms.

On the other hand, amended claim 1 of the present application recites method for improving the format efficiency of a hard disk of a hard disk drive wherein the data tracks and servo samples are written on the hard disk such that the radius of curvature of the edges of the data tracks and the radius of curvature of the edges of the subsequent servo samples are

determined based on a varying spacing distance between the read element and the write element as a function of the radius of the hard disk. These features are not disclosed in or suggested by Deeman et al.

For at least these reasons, it is respectfully submitted that amended claim 1 and its dependent claims is novel and non-obvious over Deeman et al. Amended claims 5, 9, and their dependent claims are also allowable over Deeman et al. for similar reasons.

CONCLUSION

Applicant believes of the pending claims are now in a condition for allowance. The Examiner can contact the applicant's representative at 650-242-8300.

Respectfully submitted,

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